

**SURVEY TOOL**

**OUTPATIENT AND INPATIENT**

**PHARMACY**

**SOFTWARE PACKAGES**

**Contents**

- **Outpatient**
  - **Functionality**
    - **Basics**
    - **Clinical Objections**
    - **Support & Training**
    - **Outpatient Reports**
    - **Billing Capabilities**
  - **Matrix Grid**
    - **Basics**
    - **Clinical Objectives**
    - **Support & Training**
    - **Outpatient Reports**
    - **Billing Capabilities**
- **Inpatient**
  - **Functionality**
    - **Interface**
    - **Formulary**
    - **Drug Orders (Pharmacy)**
    - **Reports/Labels**
    - **Responsibilities**
    - **Drug Orders (Nurse, Physician)**
    - **Cost Reports**
    - **Floor Stock and Inventory**
  - **Matrix Grid**
    - **Basics**
    - **Inpatient Billing**
    - **Inpatient Clinical**
    - **Interface**
    - **Formulary**
    - **Entry of Units to Patients**
    - **Reports/Labels**
    - **Drug Orders**
    - **Cost Reports**
    - **Flood Stock and Inventory**
- **Technical**
  - **Introduction**
  - **System Architecture Information**
  - **Application Infrastructure Information**
  - **Presegmentation Assessment Questions**

**OUTPATIENT  
FUNCTIONALITY  
MATRIX/GRID**

## **BASICS**

- *Prints new, renewed and refilled prescription labels:* Entry of new prescriptions including patient name and/or chart number, drug, strength, quantity, instructions (sig) in both text form and/or shortened codes, medical provider, number of refills, number of copies of the label, days supply, manufacturer, lot number, expiration date, and patient status (inpatient or outpatient). The prescriptions will be given unique numbers in sequential order. After entry of data, program will produce a standard pharmacy label, meeting all legal requirements, on an accompanying computer printer. Printer parameters need to be variable due to non-conformity of equipment throughout the Indian Health Service. Functionality must also include the ability to refill a prescription if initially entered with refills and ability to renew expired prescriptions if so desired. Computer generated labels must be also produced from refilled or renewed status. Parameters for labels must be variable for font size and style.
- *Renews prescriptions without any remaining refills:* Functionality must include the ability to renew expired prescriptions or prescriptions with no refills entered.
- *Allows pharmacist to verify data entered by technicians prior to printing labels:* Program has unique password for each user that identifies their status as a technician or pharmacist. Pharmacist has an electronic signature that allows check and verification of accuracy of data entry prior to the release of the label to be printed.
- *Security through an access and verify code, electronic signature for verification:* Program has security system that requires access and verify codes, unique to each user, that allows access to the pharmacy module. Program must allow each individual to be given all or portions of functionality according to status. Pharmacists must have electronic signatures to verify technician entries and accept interactions.
- *Checks new prescriptions against others for the same medication, therapeutic class, reported allergies, reactions and drug interactions:* Program has a drug file classified by generic name, brand name and therapeutic class (AHFS, VA, or similar classification system). A drug interaction module should be present that checks new prescription entries for interactions and provides immediate information to the data entry person. Interactions may be classified as significant, allowing the entry process to continue, or critical, stopping the entry process and forcing the pharmacist to enter an electronic signature to continue. The nature of the interaction ( i.e., increased/decreased blood levels, binding of drug, etc.) should be included in the notification. The patient data base should allow the entry of drug allergies and adverse effects for each patient. If a prescription entry is made for a drug that has been identified for a patient as an allergy or ADR, then the entry process should halt, with a message of the allergy, requiring an electronic signature to be entered to continue. The initial screen showing patient data should also identify allergies and ADR's in a bold, eye-catching manner.
- *Allows interventions with providers to be entered:* A section of program should be devoted to recording interventions with providers. Quick access at any point in the prescription entry process is essential. Information to be gathered: Type of intervention, provider, time and date, drug involved, resolution of the problem explained and dollars saved. A report template should accompany this portion of the program that allows one to run a report for a specified time period sorting by intervention type, provider or drug.
- *Cancels, by request, individual prescriptions for a patient when admitted:* The pharmacy module needs to identify patient status as inpatient or outpatient. A parameter needs to be available that allows cancellation of all outpatient status prescriptions when a patient is admitted to inpatient.
- *Allows for reprinting of labels:* Labels can be reprinted from the prescription data entry function. Labels may be printed individually by prescription number or in groups by first and last numbers.
- *Creates medication profiles for patient charts to meet JCAHO requirements of current medication list:* Creates a medication profile for each patient that can be printed and placed in the patient's medical record. All fields of the prescription data must appear on the report. Template for the report may be customized by each site to meet individual site needs.
- *Allows for look up of medication profile for a patient for a specified time period and allows printing of this profile:* Search template that allows look up of medication profile for specified time period and allows printing. Medication profile may be generated by time period or medication.
- *Allows deletion of a prescription:* Allows deletion of a prescription if individual has authority as defined by security codes.
- *Return to Stock functionality:* Allows a prescription to be designated as returned to stock if a specified time period has elapsed and the prescription has not been picked up by the patient. If an insurance

claim has been made, the return to stock functionality should interface with the claims generator and inform the payor.

- *Insurance claims generator:* The program should contain an insurance claims generator that sends directly to the insurers or a clearing house for claims. All claims should be electronic and meet current industry standards. The program should allow for the sending of claims and the receipt of claimed funds.
- *Allows addition of new drug items to formulary and non-formulary list:* The drug database file should be accessible to the pharmacist to add, delete or change drugs. The database should include drug name (generic) and strength, dosage form, status (formulary or non-formulary), therapeutic classification, DEA status (II,III,IV,V,VI), Standard sig (instructions), NDC numbers and inventory functionality. Templates for formulary and non-formulary reports should be available.
- *Inventory functionality:* Program should include inventory functions such as stock in, automatic depletion when a prescription is dispensed, acquisition cost, AWP cost and periodic updates (to interface with insurance claims functionality), order unit, dispense unit, dispense unit per order unit, source of supply, dispensing location, storage location. Inventory function should include report templates for current inventory, inventory used during a time period, etc. An interface with the current Prime Vendor is desirable. Bar-coding technology is also desirable. Budget analysis templates for reports are also needed.
- *Archives and purges prescriptions from database which have expired prior to a site specified day, leaving a record of prescription numbers on file:* Archiving functionality that allows prescription files to be purged and placed on a disk or tape for legal/historical storage. Archived files must be accessible by computer if necessary.
- *Inpatient and Outpatient Functionality:* The program should allow for patient status of inpatient or outpatient
- *Customization:* Site parameters need to be available that allow the program to be adaptable to a gamut of facilities: small to large, ambulatory care only, ambulatory/inpatient combination.
- *Speed:* Lightspeed, many sites are very high volume with a small number of staff.
- *Flexible to meet State Requirements:* The Indian Health Service has pharmacies in most of the 50 states. Each state has different requirements regarding generation of reports for Schedule drugs and regular legend drugs. The program must be able to meet all their requirements.
- *OBRA Regulations:* Although we do not need to produce receipts, as there is no money exchanging hands, we do need patient information sheets on each drug in the database. They need to be generated at will, through the prescription entry process, sent to a high speed printer.

## Clinical Objectives for Future Pharmacy Software Packages

Inpatient and outpatient pharmacy packages will have site specific options that may be set as package site parameters. The site parameters may be set differently for different internal Pharmacy divisions.

1. **Laboratory:** The pharmacy packages will be integrated with the Laboratory package.
  - a. Any specific drug may be "linked" to single or multiple lab tests. The selected patient's most recent test date and results will display when the drug name is entered for a new prescription or when a refill Rx is selected for the drug. If the patient has a pending lab test result, the computer will display the most recent lab test date and value plus the information that another result is pending along with the pending order date and time. If the patient does not have a pending result and no results are in the system, the computer will display a message "No lab results entered for **Lab Test Name**."
  - b. Upper and lower threshold lab values may be set for specific drugs. If the patient's lab test value exceeds the threshold, the pharmacist will receive a warning that includes the lab test date and value and any modifying remarks entered by the lab tech. The pharmacist will be asked to respond to a prompt that asks whether to continue with the prescription entry or to cancel the prescription entry. All pharmacist responses should be auditable by the pharmacy manager (as a management report option). There should be a site parameter that can be set to allow the pharmacist to document any action taken in the format of an electronic progress note that could be printed and added to the chart or viewed on line by other providers **or** in another format selected by the site.
2. **Standard dosing information:** Dosing information for each drug should be easily accessible from the same screen where inpatient orders or outpatient prescriptions are entered. There should be a mechanism to establish the most appropriate type of dosing based on the patient's age, renal function, and class of drug being ordered (e.g., want to use weight and age for peds, BSA for chemotherapy drugs, standard adult dose for adults with normal renal function). Route of administration information should also be included. There should be a site parameter that can be set to generate alerts when patient orders fall outside of established criteria. The computer will generate alerts based on patient parameters (e.g. "Not recommended for use in Pediatric patients", geriatric patients, renal failure, etc.) Patient information such as age, height, weight, and computer calculations of creatinine clearance and BSA should also be easily accessible from the ordering screen.
3. **Drug-allergy alert:** There should be a mechanism to enter patient allergies and adverse drug reactions and to differentiate between a true allergy and an undesired pharmacological reaction to a drug. The computer should generate a warning when orders are entered for a drug to which the patient has had an allergic reaction and to drugs in which there may be a cross-sensitivity (e.g., If a patient has a documented aspirin allergy, the pharmacist should receive an allergy cross-sensitivity warning when entering ibuprofen, along with an option to view more information about the cross-sensitivity).
4. **Drug-food interaction:** The pharmacist should have easy access (from the ordering screen) to view information about drug-food interactions and should have the ability to print this information for any selected drug. The information must be written in easy to understand language so that it can be given to the patient.
5. **Drug-drug interaction:** A drug interaction warning should be generated when entering a prescription for a new drug that interacts with a previously entered drug (for currently active prescriptions). The pharmacist should be offered the option of canceling entry, reading more about the drug-drug interaction, or proceeding with prescription entry, and have the capability of electronically documenting any type of intervention taken.

6. **Medication profile clinical quick-check:** An option to check the patient's active medications for problems with selected variables should be accessible. The option would provide information about potential problems with any medications the patient is currently taking and would include medications from other facilities as a part of the medication profile. It would be available for both Outpatient and Inpatient medication profiles.

**Medication Profile Clinical Quick Check**

**Disease State/Problem List**

Congestive Heart Failure  
Diabetes  
Hypertension  
Hyperlipidemia  
Lactation  
Pregnancy  
Renal insufficiency (This option should calculate creatinine clearance in addition to providing information about potential problems with the patient's active medications.)  
Etc.

**Drug-drug interactions** (This option will display information about any potential drug-drug interactions that exist for drugs in the Medication Profile-both.)

**Allergies/cross-sensitivities/ADRs** (This option will display information regarding medications in the patient's profile to which the patient may be allergic to or to which a cross-sensitivity between the allergen and the patient's medication may exist, or to which the patient has experienced an adverse drug reaction.)

**Drug-food interactions** (This option will display any existing drug-food interactions for all drugs listed in the patient's medication profile.)

**Dosage** (Listing for all medications in the patient's profile-select from the following list for type of dosing information to be displayed.)

Weight/age based  
Standard adult dosage  
Renal failure  
BSA

**Therapeutic duplication** (This option will list common indications of all drugs in the medication profile and will provide a visual alert for drugs that are potential therapeutic duplicates.)

**Compliance screening** (The pharmacist can select any medication orders from the outpatient medication profile and the computer will list a percentage for compliance based on refill history)

**IV compatibility** (This option will review all medications with a route of IV, IVP, or IVPB and will provide a listing of any compatibility problems, along with brief information concerning the potential problem.)

7. **Active problem list:** The pharmacy packages will be integrated with the patient's active problem list. A site parameter will be available that can be set to allow the computer to display a warning message when a drug is entered (during new Rx entry) and that drug is contraindicated in a particular problem or disease state that the patient has. In addition, pharmacists will receive an alert when a patient is currently on a medication and a new active problem is entered into the patient's record in which the medication would be contraindicated.
8. **Drug information:** Drug information for health care professionals will be available on-line and easily accessible from the drug order entry screen. The information will be from a professionally recognized comprehensive drug information database that will be periodically updated.

Drug information summaries written in a level that can be easily understood by patients will be available to print as a part of the Rx label and as patient information sheets.

9. **IV compatibility:** On-line information concerning IV compatibility will be readily available from the IV ordering screen.
10. **Documentation:** There will be a mechanism for the pharmacist to document clinical information (including patient counseling, understanding, compliance, and follow-up) and recommendations directly into the computerized patient record. The pharmacist will be able to easily access the documentation option (progress note) from the medication order entry screen. This documentation will be available for viewing by other health care professionals who provide care to the patient.



# Objectives and Functionality for Future Pharmacy Software Packages Support & Training

**Training-** The company/vendor shall provide initial training upon installation/initiation of the pharmacy software program. This training will include all users, at all sites, and all aspects of the software program that are applicable at that site. The training shall be provided PRIOR to installation of the software package. Additional training shall be provided to all sites as new versions, revisions, features, etc are incorporated into the program.

**Manuals –** Written manuals will be provided to all sites. These manuals will include descriptions of all functions, demonstrations of the entry process, examples of results, help functions, index, and table of contents. The manuals should be available in an electronic format for “on line” support and capable to be printed as necessary. New manuals will be provided as needed but at least with each revision or update.

**Support-**The company/vendor shall provide support to all user sites for problems that develop. This support will include software and hardware issues. On site support will be provided at each site when the software is initially loaded and put into use. Remote support should be provided via a toll free phone number 24 hours a day. If problems can not be resolved via the phone or modem, on site support should be available within 1 working day if the problem is critical (complete system down) with a maximum of 3 working days on site support for less critical issues. A detailed list of potential problems and acceptable on site support could be worked out between the vendor and the user. More intensive support should be readily available when new versions or features are loaded.

**Revision/Updates –**The vendor/company will provide updates, revisions, and/or modifications to the software program. The users should have input into the development of future updates as they identify needs. Revisions requested by the users will be those that benefit the entire group and not individual sites. Revisions such as drug updates, AWP pricing updates, drug interaction updates, etc should be scheduled and performed on at regular intervals. Modifications to correct critical identified bugs or problems will be done as a first priority. Revisions will be provided to the software as the national standards of practice for the software change.

## OBJECTIVES & FUNCTIONALITY FOR FUTURE PHARMACY SOFTWARE OUTPATIENT REPORTS

The pharmacy outpatient software package should have the capability to generate all required reports via electronic data gathering. These reports should be accessible for a user via a menu driven option that prompts the user for the required input such as dates, drugs, providers, cost, etc. The reports should have the capability to be “queued” to run at a later time or in the background as allow continued use of the input device, monitor, or terminal. The reports should have the capability to print to a wide variety of output devices.

The company/vendor will provide the capability and support to generate new reports as the need is identified. These new reports will be limited to ones that are required for the entire group and not individual sites. Existing reports options will be modified or changed as needs of the entire group are identified.

### Report Types

- Workload reports-a report will be available that can provide the number or prescriptions filled, average cost per prescription, number of patients requesting prescriptions, average number of prescriptions per patient request, and number of prescriptions within a specific inputted time frame. This report should have the capability to be run daily, summarized for a month time frame, or summarized for a year.
- Patient Action Profile-This report allows a user to obtain a list of a specific patient's active prescriptions, the expired prescriptions, and the canceled prescriptions. It shows those expire or cancelled prescriptions that may be renewed. The report should output by individual patient, all patients with appointments that meet on a set day, or all patients in all clinics on a set day.
- Drug Listing-this report should generate and print a list of all drugs active in the site drug dictionary. They should be listed in alphabetical order by generic name and their synonyms should be listed under each generic name.
- Commonly Dispensed Drugs-The system will generate a report of the greatest number of fills and refills in descending order for a specified time frame. It will allow for input of the date range and the upper and lower limits of the counts of fills/refills to include in the report.
- Controlled Drug Use-The system will generate a report that will show the controlled drugs used within a specific time frame. The report will include the date dispensed, the drug, the patient's name, the prescription number, the prescribing provider, and the quantity dispensed.
- Daily Prescription Log-The system will generate a log of the prescriptions filled on a certain date. This list will include the patient's name, the drug, the prescription number, the prescribing provider, and the quantity dispensed.
- Drug Recall Report-The system will be able to identify and print out a list of patients receiving a specific drug within a specific time frame. The system will allow input from the user as the drug and the time frame necessary.
- Drug Utilization Review Report-The system will provide a summarized review of drug utilization reviews entered into the software system. The

software will allow users to enter use criteria for specific medications. The input can be done during the filling by being prompted to answer the use criteria questions or the data can be inputted later. The system will allow for a beginning and ending date for the DUE.

- Inactive Drug List-The system will generate a list of drugs that have been marked inactive. The report will be printed in alphabetical order by generic name and will list the inactivation date.
- Formulary List-The system will generate a list of drugs currently on the facility formulary system. The report will be generated alphabetically by generic name.
- Non Formulary List-The system will generate a list of drugs currently being used that are not part of the facility formulary system. The report will be generated alphabetically by generic name.
- Total Drugs Dispensed-The system will generate a report of total drugs dispensed for all or a specified division and for all drugs or specific drugs. This report will be sorted either drug class or drug.
- Recompile Data-The system will allow for data to be recompiled for a specific date or date range.
- Cost Analysis Reports-The system will allow a user to retrieve cost analysis reports. These reports can be requested as division costs by drug, drug costs by division, drug costs, provided by drug costs, pharmacy statistics, drug costs by provider, high cost prescription report, provider costs, and patient status costs. The system will prompt the user to input the required dates, providers, divisions, drugs, etc.
- Statistics Request-The system will provide the user with a report indicating the total number of requests by service, the average cost per request, and the average number of fills for a specified time.
- Manage Reports- The system will provide a report of the cost or prescriptions by date, the average cost of prescription per date, the total cost of prescriptions per date, the monthly cost of prescriptions, and the divisional cost of prescriptions. The system will provide a count of prescriptions by date, a count of 30, 60, 90 day fills per date, total fills per date, total requests per date, type of prescriptions (new, refill, investigational) by date, and the number of I.V.s filled per date.
- Labeling-System allows for printing labels for prepackaged items, summary labels, reprint of summary labels, partial prescription label printing, new prescription label printing and reprinting, refill label printing and reprinting.

Outside Prescription-The system will allow for entry of prescription information for prescriptions patient's receive from another facility. This option should allow for as much data entry as possible. This should include pharmacy name, drug name and strength, date filled, prescriber's name, directions, and any remaining refills.

**BILLING CAPABILITIES**

The Pharmacy program shall include the following 3rd party billing functions:

- On-line adjudication of prescription claims in real time, working as a background function.
- Generation of paperless electronic submission of prescription claims as well as cognitive services.
- Generation of paper claims for submission of prescription claims as well as cognitive services.
- Generation of disk submission of claim batches for prescriptions and cognitive services.
- The program will be able to properly bill all 3rd party claims to insurance companies or medicaid or medicare programs, including workmen's compensation programs, HMO's, and other special programs.

The program shall also provide accompanying accounts receivable functions:

- Tracking and adjudication of all claims regardless of submission format.
- Timely reports indicating profit or loss on a per-claim basis as well as summary reports available to print for selected date ranges.

In order to simplify the interaction for the Pharmacist with the 3rd party billing system, the program shall also include:

- A database of insurers including variations in plans offered. The program shall automatically compare insurance information held on the patient with the requirements of the assigned 3rd party plan and notify the Pharmacist in real time if additional information is required.
- This database will also contain information regarding claim submission requirements for each 3rd party, and automatically choose the appropriate submission procedure for each claim, notifying the Pharmacist if there is anything manually to be done in order to complete submission of claims.
- A simple interface providing for the billing for cognitive Pharmacy services and Pharmacist primary care services. This function includes periodic automatic updates of Pharmacy related ICD-9 codes and rate tables.
- Periodic automatic update of drug average wholesale price (AWP) information.

In addition, the vendor shall provide:

- 24 hour 800-number support for 3rd party billing questions.
- Report customization for tracking of A/R.
- Form customization for special 3rd parties who require special claim forms.

**FUNCTIONALITY MATRIX/GRID**  
**COMMERICAL OFF THE SELF SOFTWARE**  
**INDIAN HEALTH SERVICE PHARMACY**

Please refer to the detailed functionality write ups for details on each area.  
The requirements are divided into the following areas.

- Outpatient Basics
- Clinical Objectives
- Support and Training
- Outpatient Reports
- Billing Capabilities

OUTPATIENT-BASICS	YES	NO	COMMENTS
Prints Labels			
Renews Prescriptions			
R.PH. Verify Tech Entered Data			
Security (access/verify code/elect sig)			
Check New RX for Same Med			
Check New RX for Same Therapeutic Class			
Check New RX for Reactions			
Check New RX for Drug Interactions			
Check New RX Against Reported Allergies			
Entry of Intervention with Providers			
Allows RPH Cancel RX Inpatient Admit			
Allows Reprint of Labels			
Create Medication Profile to meet JCAHO			
Medication Profile for Specific Time Period			
Allows Deletion of RX			
Return to Stock Functionality			
Insurance Claims Generator			
Addition of New Formulary Drugs			
Addition of New Non Formulary Drugs			
Inventory Functionality			
Archive/Purge Capability			
Site Parameters to Allow Customization			
Speed for High Volume Sites			
Flexible for All State Requirements			
Meets OBRA (PMI handouts)			

### **Matrix/Grid cont'd**

CLINICAL OBJECTIVES	YES	NO	COMMENTS
Laboratory			
Standard Dosing Information			
Drug-Allergy Alert			
Drug-Food Interaction			
Drug-Drug Interaction			
Med Profile Quick Check			
Disease State/Problem List			
Drug-Drug Interactions			
Allergies/ADR			
Drug-Food Interaction			
Dosage			
Therapeutic Duplication			
Compliance Screening			
IV Compatibility			
Active Problem List			
Drug Information On Line			
IV Compatibility			
Documentation			

REPORTS OBJECTIVES	YES	NO	COMMENTS
Workload Reports			
Patient Action Profile			
Drug Listing			
Commonly Dispensed Drugs			
Controlled Drug Use			
Daily Prescription Log			
Drug Recall Report			
Drug Utilization Review Report			
Inactive Drug List			
Formulary List			
Non Formulary List			
Total Drugs Dispensed			
Recompile Data			
Cost Analysis Reports			
Statistics Request			
Manage Reports			
Labeling			
Outside Prescription Option			

### **Matrix/Grid cont'd**

SUPPORT & TRAINING OBJ.	YES	NO	COMMENTS
Training-Initial			
Training -Updates			
Manuals-Initial			
Manuals-Update with Revision			
Support-Initial On Site			
Support-24 hour phone access			
Support-On Site-At Updates			
Revision/Updates-Regular			
Revision/Updates-Needs Shown			

BILLING CAPABILITIES OBJ.	YES	NO	
On-Line Adjudication			
Paperless Electronic Claims			
Paper Claims			
Disk Batch Claims			
Bill all 3rd Party Claims			
Tracking/Adjudication-A/R			
Profit/Loss Report-A/R			
Database of Insurers Variations			
Claim Submission Requirement			
Interface for Cognitive Services			
Hold Connection to Batch			
POS within 15 seconds			
Periodic Auto Update AWP			
Hold connection to batch			
24hr 800 Number for Questions			
Customization A/R Reports			
Custom Form Where Required			

**INPATIENT  
FUNCTIONALITY  
MATRIX/GRID**



## Inpatient Pharmacy Software Basic Requirements

### Interface:

HL7 compliant. Two-way interface with all other clinical packages, ADT, and billing.

### Formulary:

Will use the same drug formulary as the Outpatient Pharmacy package. The formulary will contain a field multiple to allow entry of the application permitted to use each drug entry (e.g., Outpatient Pharmacy, Inpatient Pharmacy, Radiology, Surgery). Drug items may also be designated as IV additive or primary fluids if desired. An optional message may be entered for each drug that will display on Medication Administration Reports(MAR)/Medication Profiles and display on screen at the time of order entry.

### Drug orders (Pharmacy entry):

- Ability to enter unit-dose orders and to designate order type at the time of entry. Establishment of order type is a site specific option which would allow the user to either define or select pre-defined order types, such as Continuous, Fill on request, One-time, On-call, Chemotherapy protocol, Self-administered, Hospital-supplied self-administered, etc.
- Ability to set automatic stop-order times for specific drugs or therapeutic categories of drugs.
- Ability to edit, discontinue, renew, or place on hold for existing drug orders.
- Entry of IV medication orders and designation of IV type (IVPB, IV admixture, syringe, chemotherapy protocol, TPN). -Maintenance option to set automatic discontinuation of orders for facility mandated circumstances such as ward transfer, post-op status, change of physician service, hospital discharge, death.
- Ability to enter IV orders for outpatients and unit-dose orders for observation-type patients (Day Surgery, L&D, etc.).
- Maintenance option to establish administration schedules and times, with capability of setting unique times for each defined inpatient ward or location. A default time should be available if times are not defined for a schedule in a particular location.
- Capable of printing bar-codes for drug unit of use labels, IV labels, MARs, etc.
- Generates a cart-fill list that can be interfaced with robotics or automated dispensing machines or that can be printed as a worksheet for manual unit-dose cart fill. Number of doses due are automatically calculated based on schedule and time. A list update option should be available to allow for inclusion of late orders prior to cart exchange. The update list should print only changes since the previous list or update **or** all medications (user should be able to select). A report of ADT changes for a specified time period should be available to allow for transfer of medications and crediting doses of discharged patients.
- A mechanism for easy entry of units dispensed and credited to individual patients should be available and should include IV medications, cart-fill drugs, and pre-exchange doses dispensed.
- Generates an IV manufacture list. List sort should be a site-selectable parameter (IV type, ward/location, patient, room/bed).
- Should have a tracking option for IV medications that are not administered to patients (not prepared, recycled, or wasted).
- On-line intervention documentation available (same as Outpatient package).

### Reports/labels:

- Ability to view on-line and print patient medication profiles, including currently active, discontinued, and expired orders (user selectable).
- Ability to enter and print Rx labels for pass meds.
- Generates an alert list for medication orders due to auto-stop in the next 24 hours.

**Reports/labels (cont.):**

- Capable of printing Medication Administration Reports for individual patients and batches by hospital location.
- Number of days to appear on the MAR should be a ward or hospital location parameter and should range from 24 hours to 30 days.
- MARs (and Medication Profiles) should be integrated with ADT, problem list, Allergy/ADR package, and vitals so that the following information will display: patient name, HRCN, DOB, location (ward-room number-bed), allergies and ADRs, admitting diagnosis, height, and weight. --
- Each site should have the option to print separate MAR sheets for continuous, PRN, and one-time orders.
- Each site should also have the ability to designate what types of medications should appear on the MAR (ward-specific parameter). Types of medications include All Meds, Non-iv only, IVPB, LVP, TPN, and Chemotherapy protocol.
- Drug order information appearing on the MAR should include order date, start and stop dates, schedule type, drug name and strength, dosage, schedule, route of administration, schedule times, and verifying pharmacist's and nurse's initials.
- MARs should print a section on each page designated for signature, title, and initials.
- Ability to generate drug order stickers that can be used to update the MAR. These should be generated automatically and on demand (site parameter).
- Electronic MARs should be available for facilities that wish to use on-line documentation and charting in place of the manually maintained MARs. Electronic MARs should utilize bar-code technology to insure accuracy and accountability (bar-coding on IV and unit of use medications, nurse ID badge, and patient ID bracelet required).
- Ability to generate a listing of drugs received during hospitalization or brief visit (Day Surgery, Oncology clinic). List should be broken down by date, drug, and amount.
- Capable of multiple file/table searching (e.g., able to generate a listing of patients who were hospitalized during a specified time period **and** who had diagnoses of diabetes and hypertension **and** who did not receive an ACE inhibitor or ARB drug during the hospital stay).

**Drug orders (Nurse, Physician):**

- Ability to designate who can order medications on their own authority and who can enter orders for others (e.g., verbal orders).
- Provide an abbreviated form of medication order entry to facilitate entry by non-pharmacist providers.
- Orders entered by other providers should generate a notice (printed and computer alert) to pharmacy. These orders would have a pending (non-verified) status prior to being reviewed and approved on-line by a pharmacist.
- The same type of clinical alerts (drug-drug, therapy duplication, allergy, drug-lab, drug-disease state) should be generated for non-pharmacist medication order entry as well as for pharmacist entry.

**Cost reports:**

- Drug cost per ward/hospital location for user-specified time period.
- Cost and/or amount dispensed for all or selected drugs over a specified time period. User may specify minimum cost/amount to print. May include all or specified locations.
- Cost of wasted IVs by all or selected additives/primary fluids over a user specified time period. May include all or selected locations.
- Listing of patients on a specific drug over a specified time period including number of doses received and total cost.
- Drug costs per provider (all or specified providers) over a specified time period.
- Drug costs per patient with selected admitting or discharge diagnosis (ICD-9) who were either admitted or discharged during a specified time period.
- Drug costs by service (Medicine, Surgery, Pediatrics) for a specified time period.
- Total drug costs to date for current inpatients (selectable by ward).

**Floor stock and inventory:**

-A perpetual inventory system will be a component of the Inpatient Pharmacy package. The system will be capable of interfacing with all major national prime vendors in order to provide automatic updating of drug costs. Optional automatic purchase order generation should be available.

-The inventory system will include location information for floor stock items and will communicate with any automated drug dispensing machines used by the facility. Drugs may be designated as floor stock for specific hospital locations.

-Dispensing reports will be available by drug classification (OTC, legend, CII-V, etc.) as well as by individual drug and can be printed for a user-specified time range.

## **Inpatient Functionality**

### **Matrix/Grid**

<b>INPATIENT BASICS</b>	<b>Yes</b>	<b>No</b>	<b>COMMENTS</b>
Drug Formulary			
Unit-dose order entry			
IV order entry			
Physician/nurse order entry with/RPH notification & verification			
User-defined order types			
Automatic stop-orders			
Order edit, discontinue, renew			
Administration schedule by ward			
Bar-codes for labels, MARS			
Cart-fill list			
-Doses due automatically calculated			
-List update option			
-Patient movement report			
Entry of doses dispensed/returned			
IV Manufacture list			
-Tracking of doses not dispensed			
Patient medication profiles			
Enter and print Rx labels for pass meds			
Generate alert list for automatic stop orders			
Medication Administration Reports			
-Prints individual MARs & batch by location			
-Optional electronic MAR w/on-line documentation & charting			
Perpetual inventory system			
Automatic cost updating			
Automatic purchase order generation			
Floor-stock location & tracking			
On-line documentation of interventions & progress notes			
<b>INPATIENT BILLING</b>	<b>YES</b>	<b>NO</b>	<b>COMMENTS</b>
Generates itemized statement by date(drug, quantity, charge)			
Electronic billing of all third party insurance companies			
Cost accounting reports and claims tracking			
<b>INPATIENT CLINICAL</b>	<b>YES</b>	<b>NO</b>	<b>COMMENTS</b>
See Clinical Objectives			
Same functionality for physician/RN order entry			
<b>INTERFACE</b>	<b>YES</b>	<b>NO</b>	<b>COMMENTS</b>
Interface with Robotics			
HL7 Complaint			
2-way with other packages			

<b>FORMULARY</b>	<b>YES</b>	<b>NO</b>	<b>COMMENTS</b>
Noted as Inpatient			
Display on MAR			
Field for Application Notation			
Type of IV			
<b>ENTRY OF UNITS TO PATIENTS</b>	<b>YES</b>	<b>NO</b>	<b>COMMENTS</b>
Generate IV Manufacture List			
On-line Intervention Document.			
<b>REPORTS/LABELS</b>	<b>YES</b>	<b>NO</b>	<b>COMMENTS</b>
View on-line and Print			
Medication Profiles			
Current Orders			
Discontinued Orders			
Expired Orders			
Enter/Print Pass Med Labels			
Alert for auto stop orders			
Print Med. Admin Report			
Site Parameters for MAR			
MAR integrated			
Site Designate Meds on MAR			
Data on MAR			
Generate Drug Order Sticker			
Electronic MARs			
List of Meds for Day Surgery			
Search Capabilities			
<b>DRUG ORDERS</b>	<b>YES</b>	<b>NO</b>	<b>COMMENTS</b>
Designate who may order			
Designate who may enter order			
Shorten Med Order System			
Notice to RPH Orders Entered			
Order Verify/Approve by RPH			
Clinical Alerts as Outpatient			
<b>COST REPORTS</b>	<b>YES</b>	<b>NO</b>	<b>COMMENTS</b>
Drug cost ward/user/time frame			
Cost/Amount drug/time frame			
Cost Wasted IVs			
Drug cost/provider/time frame			
Drug cost/pt/DX/time frame			
Drug Cost/service/time frame			
Total Cost to date for inpatients			
<b>FLOOR STOCK AND INVENTORY</b>	<b>YES</b>	<b>NO</b>	<b>COMMENTS</b>
Perpetual Inventory			
Interface prime vendors			
Location Information			
Interface with Auto Dispenser			
Dispensing Report by type			

# **FUNCTIONALITY**

## **TECHNICAL**



**PreSegmentation DII COE Runtime Compliance Assessment  
Per I&RTS, Version 3.0  
30 April 1997**

## **Introduction**

### **Purpose:**

The PreSegmentation Defense Information Infrastructure (DII) Common Operating Environment (COE) Runtime Compliance Questions are to be used for the following:

- Determine the effort required to achieve each level of DII COE runtime compliance based on the current state of the software application under evaluation;
- Provide a basis for developing an Implementation Plan to achieve compliance with the DII COE Integration and Runtime Specification (I&RTS).
- Identify information about systems and applications to support the segmentation process.

### **Scope:**

These questions are to be used for the evaluation of the following:

- Candidate GOTS mission application software to execute on top of the DII COE;
- Candidate COTS mission application software to execute on top of the DII COE;
- Candidate COTS software for integration into the DII COE; and
- Candidate GOTS software for integration into the DII COE

These questions are to be used prior to a mission application or candidate DII COE application being segmented. The questions in appendix B DII COE I&RTS should be used if the software has already been segmented. This assessment addresses only Category 1 (Runtime Environment) compliance. Category 2 (Style Guide) compliance, category 3 (Architectural Compatibility) and Category 4 (Software Quality) are not within the scope of this assessment. These questions are based on appendix B of release 3.0 of the DII COE I&RTS.

### **Roles/Responsibilities:**

These questions are designed to be used as a self-evaluation to be performed by software developers. The questions require knowledge of the operating system, COTS applications, security mechanisms, standards and protocols used, network connectivity, user interface, database management, and runtime environment of the application software under system. As such, systems and application programmers may be required to complete the entire set of questions.

### **Instructions:**

Answer all of the questions under the System Architecture Information, Application Infrastructure Information, and PreSegmentation Assessment sections of this document.

### **Scoring of Evaluation:**

There is no formula for calculating a meaningful "score" for this assessment. Instead, the results should be used to develop implementation plans for performing tasks necessary to bring applications into desired levels of runtime compliance with the DII COE.

### **Questions Format:**

- **Level Headings** - Eight levels corresponding to the 8 I&RTS Compliance Levels:
  - Level 1: Standards Compliance
  - Level 2: Network Compliance
  - Level 3: Workstation Compliance
  - Level 5: Minimum COE Compliance
  - Level 6: Intermediate COE Compliance
  - Level 7: Interoperable Compliance



- Level 4: Bootstrap Compliance

- Level 8: Full COE Compliance

- **Level Categories** - Categories corresponding to those question categories identified in the I&RTS appendices B:

- Standards Compliance
- Network services
- Database Services
- Web Services
- Account Groups
- Segment Descriptors

- Operating System
- GUI Environment
- DCE Services
- COE Component Products
- Aggregate Segments
- Process Compliance

- Runtime Environment
- COTS Products
- Hardware
- Security
- Misc.

- **Response** - Three columns: True, False, and not applicable (N/A).
- **Unique Identifier**- Unique number for the question that is keyed to the level. The numbers directly correspond to the numbered questions in appendix B of the I&RTS.
- **Reference** - Paragraph reference to the I&RTS document or other DII COE document that provides information related to the technical content of the question.
- **Question Text** - Questions represent a subset of the runtime compliance questions contained in appendix B of the DII COE I&RTS. Many of the questions have replaced the word “segment” with the word “application” in order to use these questions prior to the segmentation process. In addition, questions that contain diagonal shading cannot be answered prior to performing segmentation on the candidate software application and thus should be ignored.

Name of System: \_\_\_\_\_  
 Name of Evaluator: \_\_\_\_\_  
 Date: \_\_\_\_\_

## System Architecture Information:

- (1) Identify the components that are included in the system by filling out the following table. Indicate the quantities of each type under the type columns. Include the version number of the operating systems:

Hardware Platform	Operating System	User HCI	Data Server	File Server	Data cache	App Server

- (2) What network connectivity is required among tiers/platforms within the system?

Node 1	Node 2	Physical Connectivity	Protocol	Data being Exchanged

- (3) What other systems does the system need to interface to?

System Name	Hardware Platform	O/S	Class of Machine	Connection Type	Data Push or Pull	Quantity

- (4) How many concurrent and total users will the mission application support?

User Type	Total	Concurrent	Remote/Local	Interface Type (Char or GUI)

- (5) What security level will the system operate under?

## Application Infrastructure Information:

Each potential segment requires a separate set of responses to the PreSegmentation questions. Answer the following questions for each of the potential segments within the system. Many of these questions provide information about the extensions that may be required of the DII COE to support the application to be segmented.

- (1) What DCE services are used by the application? (Answer only if PreSegmentation question 1-TBD is false)
- (2) What other TCP/IP services (not provided by the operating system) are used by the application? (Answer only if PreSegmentation question 1-11 is false)
- (3) What other udp broadcast or point-to-point services (not provided by the operating system) are used by the application? (Answer only if PreSegmentation question 1-12 is false)
- (4) What other SLIP or PPP services (not provided by the operating system) are used by the application? (Answer only if PreSegmentation question 1-13 is false)
- (5) What modifications are required by the mission application on vendor supplied X or Motif directories (e.g., modify rgb.txt or Xdefaults) ?
- (6) List the COTS products required by the application by filling out the following table:

Product Name	Vendor	Operating System	Vendor Version #	License Required?

- (7) If the application uses NFS, describe the usage in terms of read, write, and access control.
- (8) How much shared memory does the application require?
- (9) How many semaphores does the application require?
- (10) What are the socket requirements of the application?

Socket/Port ID	Type

- (11) List the Icon image files required by the applications along with the corresponding executables to be launched as a result of activating the Icons.

<b>Name in Icon Window</b>	<b>Image File</b>	<b>File Type</b>	<b>Executable tied to Icon</b>

- (12) List the menus associated with the application that will need to be integrated into the DII COE desktop.

<b>Menu Name</b>	<b>Menu Type</b>

- (13) List the environment variables and public symbols associated with the application.

# PreSegmentation Assessment Questions

Standards Compliance (Level 1)

	Question	Reference	Standards Compliance
T F N/A	1-1	I&RTS 6.0, 6.6.7, A-	(NT) Hardware components are Windows NT-compliant as defined by the Microsoft document <i>Microsoft Windows NT Hardware Compatibility List #4094</i> .
			<b>Operating System</b>
T F N/A	1-2	I&RTS 2.5	The operating system is FIPS 151-2 POSIX.1-compliant.
T F N/A	1-3	I&RTS 9.1.2	Unless approved by the DII COE Chief Engineer, the operating system supports the System API for FIPS 119 (Ada95).
T F N/A	1-4	I&RTS 8.0, 8.1	The operating system is configured to support DCE.
T F N/A	1-5	No I&RTS Reference	The operating system is configured to support TCP/IP protocols.
T F N/A	1-6	No I&RTS Reference	The operating system is configured to support UDP protocols.
T F N/A	1-7	No I&RTS Reference	The operating system is configured to support SLIP and PPP.
T F N/A	1-8	No I&RTS Reference	(Unix) The operating system is based on System V Unix.
T F N/A	1-9	I&RTS A-1.2	(NT) The operating system is the same version as provided by the COE, or higher (see Appendix A).
			<b>Network Services</b>
T F N/A	1-10	I&RTS 8.2	The application can execute in an environment that includes DII COE-provided DCE services.
T F N/A	1-11	No I&RTS Reference	The application uses only those TCP/IP interfaces provided by the native operating system.
T F N/A	1-12	No I&RTS Reference	The application uses only those UDP or point-to-point interfaces provided by the native operating system.
T F N/A	1-13	No I&RTS Reference	The application uses only those SLIP or PPP interfaces provided by the native operating system.
			<b>GUI Environment</b>
T F N/A	1-14	I&RTS 2.1.4	The application complies with the style of the native GUI. (See GUI compliance requirements in the <i>DII</i>

		DII Style Guide	<i>Style Guide.</i> )		
			<b>Database Services</b>		
T	F	N/A	1-15	No I&RTS Reference	If an RDBMS is used, it supports FIPS-127-2 SQL queries.

## Network Compliance (Level 2)

	Question	Reference	Security
T F N/A	2-1	No I&RTS Reference	The application is able to operate correctly with the operating system security modules enabled (BSM for Solaris, C2 enabled for HP, etc.).
			<b>Operating System</b>
T F N/A	2-2	I&RTS 5.10.10, 5.20	The operating system supports NFS servers and clients.
T F N/A	2-3	I&RTS 5.20	(Unix) The operating system can be configured to support DNS/NIS/NIS+. (Note: The requirement is that the operating system be capable of supporting centralized management of key resources such as hostnames, user accounts, etc. NIS+ is not a specific requirement because not all vendors support it.)
T F N/A	2-4	I&RTS 6.6.1	(NT) NT is configured to use the NTFS file system for files stored on hard disks. (Note: NT uses the FAT file system for floppy diskettes. Such usage is generally transparent to applications. However, NTFS is required on the hard disk for security reasons.)
			<b>Network Services</b>
T F N/A	2-5	No I&RTS Reference	The operating system supports sockets, including Berkeley sockets.
T F N/A	2-6	No I&RTS Reference	The application is able to operate properly in an environment where other applications are performing UDP broadcasts.
T F N/A	2-7	I&RTS 5.10.3	The application does not require any particular hostname conventions nor does it need reserved IP addresses.
T F N/A	2-8	No I&RTS Reference	The ability of the application to execute correctly is independent of the type of LAN (e.g., Class B or Class C) connected to the platform.
T F N/A	2-9	I&RTS 5.20	(Unix) The application can operate in a DNS/NIS/NIS+ environment. (Note: The requirement is that the application be able to operate correctly when the features supported by the operating system for centralized management of key resources are enabled.)
T F N/A	2-10	I&RTS 6.3	(NT) If the target system is configured to use Microsoft domains and workgroups, the application can operate correctly in such an environment.
T F N/A	2-11	I&RTS 6.2, 6.6.6	(NT) The application uses native PC byte order for data internal to the PC, but uses network byte order for data external to the PC.
T F N/A	2-12	I&RTS 6.2, 6.6.6	(NT) The application uses native PC byte order to access \$DATA_DIR/local and \$DATA_DIR/PCglobal PC data.

T	F	N/A	2-13	I&RTS 6.2, 6.6.6	(NT) The application uses network byte order to access \$DATA_DIR/global data.
					<b>GUI Environment</b>
T	F	N/A	2-14	I&RTS A-1.1	(Unix) If the application resides on a machine with an X server, the X server is compatible with the version supplied by the COE (see Appendix A).
					<b>Database Services</b>
T	F	N/A	2-15	I&RTS 5.8.1.2.2	Database updates operate correctly with DBMS security audits enabled.
T	F	N/A	2-16	I&RTS 4.2.4	The database is recoverable to a consistent state in the event of DBMS server, network, or client application failure. This includes both hardware and software failures.
T	F	N/A	2-17	I&RTS 4.2.4	Database transactions implement strict two-phase locking.



## Workstation Compliance (Level 3)

	Question	Reference	Operating System
T F N/A	3-1	I&RTS 5.9.4	If extensions to the operating system as configured for the COE are required, all such extensions have been identified and document. This includes the configuration of all operating system resources including the amount of shared memory required, the number of semaphores, the message queue size, etc.
T F N/A	3-2	I&RTS 5.9.4	The operating system configuration required by the application does not decrease or conflict with any system resources as already configured for the COE. The application may increase system resource configurations, but not decrease them.
T F N/A	3-3	I&RTS 5.9.9	The application does not use hardcoded port assignments (e.g., from <code>/etc/services</code> ) and is not sensitive to specific ports other than well-known port assignments (e.g., <code>ftp</code> , <code>listen</code> ).
			<b>Network Services</b>
T F N/A	3-4	No I&RTS Reference	The application can operate in an environment configured to only use anonymous ftp.
			<b>GUI Environment</b>
T F N/A	3-5	I&RTS 5.9.3	(Unix) The application does not make direct calls to X libraries that conflict with applications that use Motif libraries to access lower-level X functions. For example, the application does not use lower-level X library functions to establish window border style or colors that either conflict or override settings established by Motif.
T F N/A	3-6	I&RTS 5.9.3	(Unix) The application does not alter any files in the vendor-supplied X or Motif directories (e.g., modify <code>rgb.txt</code> or <code>Xdefaults</code> ).
T F N/A	3-7	I&RTS A-1.1	(Unix) The application can use the same X server version and <code>xdm</code> version that is supplied by the COE (see Appendix A).
T F N/A	3-8	I&RTS A-1.1	(Unix) The application uses either the same version of Motif as provided by the COE (see Appendix A), or does a static link to Motif libraries so that it does not conflict with other COE-based segments. The specific Motif version required is identified in the <i>DII Style Guide</i> .
T F N/A	3-9	I&RTS A-1.2	(NT) The application uses the same version of NT as supplied by the COE (see Appendix A).
T F N/A	3-10	I&RTS 6.6.7-9/9	(NT) Unless a COTS application, the application uses only Win32 APIs to access Windows routines.
			<b>Database Services</b>
T F N/A	3-11	I&RTS 4.1, 4.2.2	The application does not modify the user's DBMS environment that will be established by the DBMS

					COE-component segment.
					<b>DCE Services</b>
T	F	N/A	3-12	I&RTS 8.1.1	If using RPCs, the application is compatible with the RPC mechanisms supported by the DCE version supplied by the COE.
					<b>COTS Products</b>
T	F	N/A	3-13	DII COE Baseline Document	The software is capable of running in an environment that includes DII COE approved COTS products as specified in the <i>DII COE Baseline Document</i> for the COE version being used.
T	F	N/A	3-14	I&RTS 5.4.1	Configuration changes made to COTS products, if any, do not render inoperable any features available to COE-based segments or users that are already using the COTS product.
T	F	N/A	3-15	I&RTS 5.4.1	The application does not require any source code modifications to COTS products.
T	F	N/A	3-16	I&RTS 6.7.7-8/9	(NT) If the application is a COTS product that uses 16-bit APIs, there is no 32-bit alternative.
					<b>Runtime Environment</b>
T	F	N/A	3-17	I&RTS 2.1.4	The application does not alter any files outside its own directory in such a way that it will conflict with COE-based segments.
T	F	N/A	3-18	I&RTS 2.1.4	The application can operate on a COE-configured workstation without altering the location or version of any system software (Unix, X Windows, Motif, NT, etc.).
					<b>Miscellaneous</b>
T	F	N/A	3-19	I&RTS 6.6.3, 6.6.7-2	(NT) The application supports VGA and SVGA resolutions.
T	F	N/A	3-20	I&RTS 6.6.7-7	(NT) The application supports 16x16, 32x32, and 64x64 icons.

## Bootstrap Compliance (Level 4)

	Question	Reference	Security
	4-1	I&RTS 5.7.1	If an aggregate segment, the security level of the parent dominates the security level of the children.
T F N/A	4-2	I&RTS 5.7.2	Documentation is available with the application that clearly identifies releasability restrictions.
			<b>Standards Compliance</b>
	4-3	I&RTS 2.1.4	All software and data are packaged in segment format.
	4-4	I&RTS 2.1.4, C-3.2.2	The segment successfully passes <code>VerifySeg</code> with no errors.
	4-5	I&RTS 2.1.4	The segment uses the same bootstrap COE as provided by the COE, or all extensions required are documented and handled by the segment in such a way that it does not interfere with other segments. For example, community files are not destructively overwritten by the segment because other segments may also need to make alterations to the community file during their own installation.
	4-6	I&RTS 2.1.4	The segment can be installed and removed completely through the COE installation tools. If the segment is a “permanent” segment (see Chapter 5) and is not a candidate for removal, the segment has been tested to ensure that upgrades successfully preserve data files that must be retained during upgrades.
T F N/A	4-7	I&RTS 6.5	(NT) Unless a COTS product, the application does not modify the root-level <code>AUTOEXEC.BAT</code> or <code>CONFIG.SYS</code> files.
T F N/A	4-8	I&RTS 6.5	(NT) Unless a COTS product, the application does not modify any Windows <code>INI</code> files.
			<b>Database Services</b>
T F N/A	4-9	I&RTS 4.3.4.1, 5.6.3.1	Database owners do not use system storage areas during database creation.
T F N/A	4-10	I&RTS 5.6.3.1	The database application does not modify the core database storage areas, create objects in system storage areas, or create objects in public storage areas (e.g., create rollback table space).
			<b>COTS Products</b>
T F N/A	4-11	DII COE Baseline Document	The application can use the same COTS configurations as those specified by the applicable <i>DII COE Baseline Document</i> for any COTS product it uses that may also reside on the workstation.
			<b>Runtime Environment</b>
T F N/A	4-12	I&RTS 5.9 and all subparagraphs	Runtime extensions to the COE required by the application have been identified and documented.

	4-13	I&RTS 2.1.4	The segment uses the same runtime environment configuration as provided by the COE with extensions, if any, made through environment extension files and segment descriptors.		
	4-14	I&RTS 2.1.2.1 DII COE Baseline Specification	The segment uses the same versions, configurations, patches, and file locations as provided by the COE for all components of the bootstrap COE.		
	4-15	I&RTS 5.2 (including sub paragraphs)	The segment uses the DII COE directory layout or a migration plan to achieve proper directory layout has been prepared.		
T	F	N/A	4-16	I&RTS 6.6.1	(NT) The application is able to handle Unicode filenames.

## Minimal DII Compliance (Level 5)

	Question	Reference	Security
	5-1	I&RTS 5.7.5	For COE-component segments, prior approval has been granted by the DII COE Chief Engineer to provide a command-line mode or feature. The \$CMDLINE keyword is used in the Direct segment descriptor to indicate command-line access is provided.
	5-2	I&RTS 5.7.5	For mission-application segments, prior approval has been granted by the Chief Engineer to provide a command-line mode or feature. The \$CMDLINE keyword is used in the Direct segment descriptor to indicate command-line access is provided.
	5-3	I&RTS 5.7.5	For all segments, whether COE-component segments or mission-application segments, prior approval has been granted by the DII COE Chief Engineer to provide a command-line mode or feature that provides “superuser” access. The \$CMDLINE and \$SUPERUSER keywords are used in the Direct segment descriptor to indicate superuser access.
T F N/A	5-4	I&RTS 5.7.5	The application does not provide a “back door” access to a command-line prompt. If a command-line mode is available, it is through a known, documented approach for all authorized users and not through some hidden, undocumented approach.
	5-5	I&RTS 5.7.6, 5.7.7	If privileged user permissions are required during segment installation or removal (e.g., use of the \$ROOT keyword), prior approval has been granted by the Chief Engineer.
T F N/A	5-6	I&RTS 5.7.7	(Unix) The application does not alter the COE established umask setting.
			<b>Standards Compliance</b>
	5-7	I&RTS 2.1.4	The segment uses the same kernel COE as provided by the COE and documented in the applicable <i>DII COE Baseline Document</i> for the COE version being used.
T F N/A	5-8	I&RTS 5.2	All directory and filenames contain only printable, non-blank, standard ASCII characters.
T F N/A	5-9	I&RTS 5.2.2	The segment does not create user login accounts. (This does not apply to the account group segments that are part of the kernel COE, but it <i>does</i> apply to all other account group segments.)
T F N/A	5-10	I&RTS 5.2.2	The application can operate in an environment where user accounts are created and deleted at any time by the site administrator responsible for managing user accounts. The application accounts for this and creates and initializes operator preferences the first time the application is activated after a new account is created.
T F N/A	5-11	I&RTS 5.2	The segment loads correctly into the directory assigned by the COE installation tools. It does not require being loaded in any specific directory, or the Chief Engineer has granted a waiver. (This requirement

			does <i>not</i> apply to COTS segments.)
	5-12	I&RTS 3.1 and all it's subparagraphs	The segment conforms to the COE version numbering scheme.
T F N/A	5-13	I&RTS 5.4.3	The application does not move directories or files from the application's home directory into other directories. This requirement does <i>not</i> apply to COTS segments, nor does it apply to data files.
	5-14	I&RTS 6.4	(NT) The segment creates all its subkeys underneath SegType\SegDirName where SegType is Account Groups, COE, COTS, Patches, Data, or Software, and SegDirName is the segment's directory name.
T F N/A	5-15	I&RTS 6.4	(NT) Unless a COTS application, the application does not create any root keys.
	5-16	I&RTS 6.4	(NT) All segment subkeys are named with the segment prefix.
T F N/A	5-17	I&RTS 6.6.1	(NT) The application supports UNC filenames.
			<b>Operating System</b>
T F N/A	5-18	I&RTS 5.5.9	The application does not rename well defined ports (e.g., ftp, listen), or declare new port names which have the same port number as well-defined ports in the Unix <code>/etc/services</code> file, or the NT equivalent of this file.
	5-19	I&RTS 5.5.3	If ports are required, the quantity has been identified and documented in the COEServices segment descriptor.
			<b>GUI Environment</b>
T F N/A	5-20	I&RTS 2.1.4, 5.9.3	The application is fully compliant with the style of the native GUI (see compliance requirements in the <i>DII Style Guide</i> ).
	5-21	I&RTS 5.9.3	The segment uses the window manager provided by the COE (d <sub>t</sub> w <sub>m</sub> <sup>1</sup> for Unix, Windows NT for NT platforms).
T F N/A	5-22	I&RTS 5.9.3	(Unix) The application is compatible with the XFONTSDIR, XAPPLRESDIR, and XENVIRONMENT settings established by the COE.
			<b>Database Services</b>
T F N/A	5-23	I&RTS 4.2.7	Application components are separate from their corresponding database components.

<sup>1</sup> With the present *I&RTS* release, a commercial CDE product provides the desktop. Thus, d<sub>t</sub>w<sub>m</sub> replaces m<sub>w</sub>m from the previous *I&RTS*. There should not be any impact to any segment that presently works under m<sub>w</sub>m.

T	F	N/A	5-24	I&RTS 4.2.7	Application components that access databases operate correctly from any COE-compliant workstation and are not required to be installed on a database server.
T	F	N/A	5-25	I&RTS 4.2.8	DB Applications are not tied to a particular server name (i.e., The application does not hardcode a server name.)
T	F	N/A	5-26	I&RTS 4.3.1.2	The DB application installation revokes the owner account's DBMS login privilege upon successful completion of database installation so that no owner accounts can be used to connect to the database.
T	F	N/A	5-27	I&RTS 4.3.1.2	Owner accounts are not used to connect to databases except during DB application installation.
T	F	N/A	5-28	I&RTS 4.3.1.2	Database owner accounts do not have database administrator privileges.
T	F	N/A	5-29	I&RTS 4.2.1	Separate segments are provided that create required database dependencies. These segments are executed by the owning database(s).
T	F	N/A	5-30	I&RTS 4.3.1.2	The DB application installation requires the owner account password to be changed upon completion.
T	F	N/A	5-31	I&RTS 5.6.3.1	Segments do not modify the core DBMS instance's configuration.
T	F	N/A	5-32	I&RTS 5.4.5, 5.6.3.1	The segment does not assume any particular disk configuration when creating data files.
T	F	N/A	5-33	I&RTS 5.8.1.3	Any modified versions of DBMS COE tools reside with the application's client segment.
T	F	N/A	5-34	I&RTS 5.4.5	Scripts are provided for the DBA's use to add, modify, and remove user privileges. These scripts are documented and the documentation is submitted to the SSA with the segment.
T	F	N/A	5-35	I&RTS 4.3.7.2	The segment does not modify another segment's database schema.
T	F	N/A	5-36	I&RTS 4.3.6	Grants are not made to public or general-purpose users (e.g. Oracle's PUBLIC user).
T	F	N/A	5-37	I&RTS 4.3.1.1, 4.3.1.2	Only the owner and the DBA are able to administer grants.
T	F	N/A	5-38	I&RTS 4.2.1, 5.4.5	Operations that set or redirect the user's DBMS environment variables take place only within the application's execution space.
T	F	N/A	5-39	I&RTS 4.3.4.5	No indexes are created on another database's tables.
T	F	N/A	5-40	I&RTS 4.3.6	Application-level permissions are not granted to DBA accounts or to database roles used for DBMS administration.
T	F	N/A	5-41	I&RTS 5.4.5, 5.5.9	Database applications are identified as unique or sharable according to their potential for sharing.
					<b>Web Services</b>
			5-42	I&RTS 7.1.2	The segment's HTML files are in the segment's \$DATA_DIR/local/SegDir/pub directory.

T	F	N/A	5-43	I&RTS 7.3.1, 7.5	The application supports HTML 3.2 and complies with style specifications (see the <i>DII Style Guide</i> ) for Web applications.
T	F	N/A	5-44	I&RTS 7.3.1	The application provides a notification to “disadvantaged” users if they are using a browser that does not support the features provided by the application.
					<b>Runtime Environment</b>
			5-45	I&RTS 2.1.4	The segment is launched from the same desktop provided with the COE.
T	F	N/A	5-46	I&RTS 2.1.4	The desktop is configured in accordance with the <i>DII Style Guide</i> .
T	F	N/A	5-47	I&RTS 5.2	The application uses relative pathnames for files within the application.
T	F	N/A	5-48	I&RTS 5.2	The application does not use the “~” character, for Unix or its NT equivalent, for referencing pathnames in environment extension files which become a part of the global runtime environment.
T	F	N/A	5-49	I&RTS 5.3	The application does not use any reserved symbols as its own from the <i>I&amp;RTS</i> Chapter 5.
T	F	N/A	5-50	I&RTS 5.2	The application does not override or alter any environment variable that it doesn’t create.
T	F	N/A	5-51	I&RTS 9.3	The application completely separates the development environment from the runtime environment, and no development environment tools, scripts, or other executables are required at runtime.
			5-52	I&RTS 5.4.3	The segment uses the same global runtime environment configuration as provided by the COE, with extensions, if any, made through the appropriate environment extension files and segment descriptors.
			5-53	I&RTS 5.5.3	The segment only listens on assigned ports, only registers assigned RPC addresses, and only adds assigned system UIDs (Unix).
			5-54	I&RTS 5.2	The segment home environment variable points to the segment’s home directory. The name of the environment variable is <code>segprefix_HOME</code> where <code>segprefix</code> is the segment’s assigned prefix.
			5-55	I&RTS 5.2	The segment does not add a “home” environment variable to the affected account group. It uses only “local” home environment variables, if at all.
					<b>COE-Component Segments</b>
			5-56	I&RTS 5.4.8	The segment has been authorized as a COE-component segment by the DII COE Chief Engineer.
			5-57	I&RTS 5.5.29	Segments in the kernel COE fully specify dependencies upon the components in the bootstrap COE. This is done through the Requires segment descriptor.
			5-58	I&RTS 5.3	If a parent COE-component segment, the following environment variables (as appropriate for a Unix versus NT environment) are automatically defined as specified by this document: <code>DATA_DIR</code> ,



			LD_LIBRARY_PATH, LOGNAME, LOGIN_NAME, MACHINE_CPU, MACHINE_OS, path, TMPDIR, TZ, XAPPLRESDIR, XFONTSDIR, XENVIRONMENT.		
T	F	N/A	5-59	I&RTS 5.4.8	If the application is to be segmented as a COE child segment, the application does not alter the Unix path environment variable.
			5-60	I&RTS 5.4.8	All executables and other public symbols use the segment prefix unless otherwise approved by the DII COE Chief Engineer. (Certain legacy segments may be “grandfathered” by the DII COE Chief Engineer.)
					<b>Account Groups</b>
			5-61	I&RTS 5.4.2	If the account group is part of the COE, prior approval has been received from the DII COE Chief Engineer to create an account group segment.
			5-62	I&RTS 5.4.2	If the account group is a mission-application segment, prior approval has been received from the Chief Engineer to create an account group segment.
			5-63	I&RTS 5.4.2	The environment settings from /h/COE/Scripts are automatically included in the runtime environment of the account group being created. (In Unix this may be accomplished by “sourcing” /h/COE/Scripts/.cshrc.COE.)
			5-64	I&RTS 5.4.2	The segment provides an executable in the Scripts subdirectory, named Runsegprefix where segprefix is the segment prefix, to initiate execution of the account group’s applications.
			5-65	I&RTS 5.3, Table 5.2	The following environment variables, as appropriate for NT versus Unix, are defined: COE_SYS_NAME, DISPLAY, HOME, path, SHELL, TERM, USER, USER_HOME, USER_DATA, USER_PROFILE.
			5-66	I&RTS 5.4.2	(Unix) The segment provides files of the form filename.segprefix for all environment files that segments may reference or extend through the ReqrdsScripts descriptor.
			5-67	I&RTS 6.4	(NT) The application establishes any required global environment settings in the registry.
					<b>Aggregate Segments</b>
			5-68	I&RTS 5.5.29	If a parent segment, the segment does not specify a dependency on any of its child segments.
			5-69	I&RTS 5.4.7	If a child segment, the segment does not specify a dependency on its parent segment nor any other children in the aggregate.
			5-70	I&RTS 5.4.7	Only one segment in the aggregate is designated as the parent.

			Segment Descriptors		
			5-71	I&RTS 5.5	The segment uses SegInfo or individual segment descriptor files, but not both.
			5-72	5.5.72, 5.9.6	The segment describes all background processes, if any, through the Processes descriptor.
			5-73	I&RTS 2.1.4, 5.5.7,	All segment dependencies and conflicts are fully declared through the appropriate descriptor. (Mission-application segments need not specify dependencies on segments contained in the kernel COE unless they are version sensitive. COE-component segments need not specify dependencies on the kernel COE unless they are sensitive to version changes in the kernel COE.)
T	F	N/A	5-74	I&RTS 5.5, 5.5.15	Memory and disk space requirements are fully and accurately known.
			5-75	I&RTS 5.5.11	If not a permanent segment, the DEINSTALL script and Comm.deinstall descriptor have been fully tested to ensure they correctly make the changes indicated and completely restore the system to the state it was in prior to loading the segment.
			5-76	I&RTS 5.5.4, 5.5.5	The segment Community and Comm.deinstall (if applicable) descriptors have been fully tested to ensure that they correctly makes the changes indicated, and that they do not inadvertently destroy settings that may have been made by another segment. <sup>2</sup>
			5-77	I&RTS 5.5.28	The ReqrdScripts descriptor contains no more than 32 script names and no script name is longer than 32 characters.
T	F	N/A	5-78	I&RTS 3.2.1.2, 5.6.1	(Unix) The PostInstall, PreInstall, and DEINSTALL scripts have been checked and verified to <i>not</i> do a Unix mv across file partitions.
T	F	N/A	5-79	I&RTS 6.4	(NT) Unless a COTS segment, the segment uses the Processes descriptor to create boot time processes. It does not set the Run or RunOnce keys underneath CurrentVersion.
T	F	N/A	5-80	I&RTS 6.8	(NT) The segment's executable descriptors use the .EXE extension for compiled executables and .BAT for batch files.
T	F	N/A	5-81	I&RTS 6.8	(NT) The segment uses SegInfo and <i>not</i> individual segment descriptor files.

<sup>2</sup> Developers should generally use \$APPEND to add to community files, rather than \$DELETE or \$REPLACE. Developers should ensure that they delete or replace only those entries to a community file that their segment would have added.

			Process Compliance		
T	F	N/A	5-82	I&RTS 3.2.1.1, Appendix E	The segment has been registered with the SSA.
T	F	N/A	5-83	I&RTS 5.9.6	All background, boot, RunOnce, and periodic processes have been identified.
T	F	N/A	5-84	I&RTS 3.2.1.1, Appendix E	System resources required by the segment have been registered with the SSA.
T	F	N/A	5-85	I&RTS 5.3	The segment prefix being used is the prefix assigned at segment registration time.
T	F	N/A	5-86	I&RTS 5.5.3, 5.9.9,	The ports, UIDs (Unix), and RPC addresses being used are those assigned at segment registration time.
T	F	N/A	5-87	I&RTS Appendix A	The platforms and operating systems on which the application can run have been identified and documented in a <i>Version Description Document</i> , or its equivalent.
T	F	N/A	5-88	I&RTS 5.5.29	All COTS products required, including the required version, are documented in the <i>Version Description Document</i> or its equivalent.
			5-89	I&RTS 5.10.7	All required licenses are provided to the SSA with the application, or negotiations have been made with the SSA to use licenses procured by the SSA.
T	F	N/A	5-90	I&RTS 5.5.29	Application dependencies are noted in the <i>Version Description Document</i> or its equivalent.
			5-91		The <i>Version Description Document</i> , or its equivalent, has been submitted with the segment to the SSA.
T	F	N/A	5-92	I&RTS 10.2	The segment has been submitted to and accepted for inclusion in the SSA's online library.
T	F	N/A	5-93	I&RTS 5.5.36	The VERSION descriptor has been updated from the previous release in accordance with the requirements specified in Chapter 5. (This does not apply to the initial release of the segment.)
T	F	N/A	5-94	I&RTS 5.2.1	The segment is submitted with an annotated output from VerifySeg. All warnings are explained in full in VSOutput. <sup>3</sup>

<sup>3</sup> This can be done by redirecting the output of VerifySeg to the file VSOutput. Then, use any convenient ASCII editor to edit VSOutput to insert comments to explain all warning messages.

	5-95	I&RTS 5.2.1	The segment is submitted with a set of integration notes (IntgNotes) as described in Chapter 5.
	5-96	I&RTS 3.2.1.2	The segment has been loaded and tested in the COE environment prior to submission to the SSA.
	5-97	I&RTS 3.2.1.2	Segment installation has been tested through the same installation tools used by site operators. (TestInstall alone does not satisfy this requirement. The COEInstaller tool must be used to load and remove the segment.)
	5-98	I&RTS 2.1.4	If removable, the segment has been tested and confirmed that it can be successfully removed from the system.
	5-99	I&RTS 5.2.1, 5.5.22	If special installation/integration procedures/problems exist, then they are incorporated into the PostInstall (or other) descriptors as appropriate, and documented in the IntgNotes descriptor file.
T F N/A	5-100	I&RTS 6.4	(NT) Unless a COTS application, the application does not register "uninstall" information in the registry (e.g., subkey CurrentVersion\Uninstall).
	5-101	I&RTS 6.4	(NT) If an approved segment registers "uninstall" information in the registry, the \$USES_UNINSTALL keyword is declared in the segment's Direct descriptor.
			<b>Miscellaneous</b>
T F N/A	5-102	I&RTS 5.2.2	The application creates and initializes dynamic data files that are updated as the system executes (e.g., message logs, operator preferences). If an expected file is missing, the application generates a runtime error message and gracefully terminates with an appropriate message to the operator.
	5-103	I&RTS 5.4.6	If a patch segment, it follows the patch segment naming convention.
T F N/A	5-104	I&RTS 2.1.4	The application does not alter <i>any</i> files outside its own directory (such as system files) with the following exceptions: (a) the segment is creating temporary files or directories in directories established for temporary storage; or (b) the segment is modifying files created for it by the operating system.
T F N/A	5-105	I&RTS 5.4.3	The application does not create copies of executables from other applications.
	5-106	I&RTS 5.4.11	The segment does not contain any circular dependencies (e.g., Seg A depends on Seg B, Seg B depends on Seg C, Seg C depends on Seg A is not allowed).
	5-107	I&RTS 5.5.11	The segment does not delete itself via the DEINSTALL descriptor, nor perform any other operations that are handled by the COE installation tools (e.g., undo changes made to community files).

## Intermediate DII Compliance (Level 6)

	Question	Reference	Security
	6-1	I&RTS 5.7.8	The segment satisfies at least one of the following two requirements: (1) The segment contains only subdirectories directly underneath the segment's home directory. All files are at least one level down from the segment's home directory. (2) The segment has no directories or files that have the equivalent of the Unix 777 file permissions.
T F N/A	6-2	I&RTS 5.7.1, 5.7.2	If the data for a particular application contains any classified entries, then all of its data is packaged in a separate data component and classified accordingly.
T F N/A	6-3	I&RTS 5.7.1	Classified applications are packaged separately from unclassified applications, or from applications which are classified at a lower level.
T F N/A	6-4	I&RTS 5.7.7	Termination of application execution, whether premature, inadvertent, or intentional does not place the operator at a command-line prompt.
	6-5	I&RTS 5.7.6	The Chief Engineer has authorized privileged processes in the segment. The \$PRIVPROC keyword is stated in the <code>Direct</code> segment descriptor, and the privileged processes are listed in the <code>Processes</code> segment descriptor.
T F N/A	6-6	I&RTS 5.7.6	(Unix) The application does not contain any shell scripts that SUID or SGID to root.
			<b>Standards Compliance</b>
T F N/A	6-7	I&RTS 2.1.4	The application is either completely compliant with the <i>DII Style Guide</i> or has minimal deviations that have been approved by the Chief Engineer.
T F N/A	6-8	I&RTS 5.5.15	The application is available on all COE-supported platforms unless otherwise approved by the Chief Engineer.
	6-9	I&RTS 2.1.4, 5.5	The segment does not alter any community files except through COE segment descriptors or published APIs.
	6-10	I&RTS 5.2, 5.2.1, 5.2.2	The segment does not use directories with different names than specified in Chapter 5 to fulfill the purpose of <code>Scripts</code> , <code>bin</code> , <code>data</code> , etc. ( <code>progs</code> and <code>libs</code> are acceptable for this level for as long as the COE tools support them.)
T F N/A	6-11	I&RTS 9.1.1	If the application contains APIs written in C, the header files for the public APIs are ANSI-C-compliant and use function prototypes, and the header files are constructed to support C++ calling routines as described in Chapter 9.
T F N/A	6-12	I&RTS 9.1.2	Specification files for Ada are included for all APIs, unless the Chief Engineer has granted a waiver.

			6-13	I&RTS 6.2	(NT) All INI files used that are local to the segment are stored in the segment's data/INI subdirectory.
T	F	N/A	6-14	I&RTS 6.6.1	(NT) The application supports long filenames.
			6-15	I&RTS 6.2	(NT) The segment uses filename extensions in accordance with standard Windows usage (TXT for ASCII files, DLL for dynamic link libraries, etc.).
					<b>GUI Environment</b>
T	F	N/A	6-16	I&RTS 5.9.3	(Unix) The application does not alter any X or Motif supplied files (e.g., Xdefaults, rgb.txt).
					<b>Database Services</b>
T	F	N/A	6-17	I&RTS F-1.5	Oracle Public Synonyms are not used.
T	F	N/A	6-18	I&RTS 4.3.1.3	Database applications do not create user accounts, except for a database services account.
T	F	N/A	6-19	I&RTS 4.3.6	Grants are made to database roles/groups, not user accounts or general-purpose users (e.g., Oracle's PUBLIC user).
T	F	N/A	6-20	I&RTS 4.3.1.3	The application does not assume the existence of any particular user.
T	F	N/A	6-21	I&RTS 4.3.4.2	Data elements do not use machine-dependent data types.
T	F	N/A	6-22	I&RTS 5.8.2	The database application does not create data objects in other databases except through documented inter-database dependencies (e.g., triggers) and published APIs.
T	F	N/A	6-23	I&RTS 5.8.2	External object dependencies are known.
			6-24	I&RTS 5.8.1, 5.8.2	The segment uses only the DBMS provided by the COE, or has an approved migration plan.
T	F	N/A	6-25	I&RTS 2.1.6	The segment either implements DOD 8320 data standards, or has an approved plan for doing so. (The migration plan must be coordinated with the DII COE Chief Engineer for any data fields that are part of Universal or Shared data segments. Data fields that are part of a Unique data segment do not require DII COE Chief Engineer approval.)
			6-26	I&RTS 4.3.5	Database roles that span multiple database segments are defined in their own segments.
T	F	N/A	6-27	I&RTS 4.3	Data objects and elements follow naming conventions specified in Chapter 4.
T	F	N/A	6-28	I&RTS 4.3.4	Definitions for schema components are provided in the DBMS data dictionary.

				<b>Web Services</b>
	6-29	I&RTS 7.1.1.1		The segment uses the Web server provided by the COE rather than bringing along its own Web server.
				<b>COTS Products</b>
	6-30	I&RTS 5.4.1		All COTS products are packaged as separate, individual COTS segments.
T F N/A	6-31	I&RTS 5.4.1		The COTS installation script ensures that there is enough space in the directories where the COTS product will be installed and uses COEInstError to report an error message if not.
	6-32	I&RTS 5.4.1, 5.5.14		The FilesList descriptor has been validated as correctly documenting what files and directories constitute the COTS product. This does not apply to COTS products in the bootstrap COE.
				<b>Runtime Environment</b>
T F N/A	6-33	I&RTS 5.2		If the application creates temporary files, they are deleted when no longer needed.
T F N/A	6-34	I&RTS 5.2		If the application uses absolute pathnames to reference files outside the application, it is able to determine the absolute path at runtime, and is able to handle symbolic links that are themselves symbolic links.
T F N/A	6-35	I&RTS 5.2, 5.9.4		The application reuses environment variables already defined by the COE or by the affected account group. It does not create any environment variables that are identical in value to those defined by the COE or the affected account group, or that can be derived from them.
T F N/A	6-36	I&RTS Table 5-2		The application does not create any environment variables or other public symbols with the same name as any environment variables listed as reserved in the <i>I&amp;RTS</i> .
T F N/A	6-37	I&RTS 6.6.2		Shared libraries (Unix) and DLLs (NT) provided by the application are in the application's bin subdirectory.
T F N/A	6-38	I&RTS 5.4.3		The application does not insert the current working directory (e.g., ".") into the search path for executables.
	6-39	I&RTS 5.9.4		(Unix) The global environment is extended through runtime extension files in the segment's Scripts subdirectory.
	6-40	I&RTS 5.4.4		(Unix) Fonts and app-defaults located underneath the segment's data subdirectory follow the segment prefix naming convention specified in the I&RTS.
	6-41	I&RTS 5.4.3		(Unix) The segment appends, not prepends, its bin subdirectory to the environment variable used for the search path for finding executables. (This does not apply to COE child segments.)

T	F	N/A	6-42	I&RTS 5.2	(Unix) The application uses relative pathnames for symbolic links used to reference files within the application.
T	F	N/A	6-43	I&RTS 5.2	(NT) The application uses relative pathnames for shortcuts used to reference files within the application.
			6-44	I&RTS 6.6.2	(NT) The segment stores its DLL files in the segment's bin subdirectory.
T	F	N/A	6-45	I&RTS 6.2	(NT) Unless a COTS product, the application does not alter the Windows path environment variable.
T	F	N/A	6-46	I&RTS 6.0 and subparagraphs	(NT) The application does not use polling as a synchronization technique.
T	F	N/A	6-47	I&RTS 6.6.7	(NT) The application does not use MS-DOS functions.
					<b>Segment Descriptors</b>
			6-48	I&RTS 5.5.27	The ReleaseNotes descriptor conforms to the requirements stipulated in Chapter 5.
T	F	N/A	6-49	I&RTS 5.5.13	If any files need special permission/ownership settings, they are established through the FileAttribs descriptor if the descriptor supports the required setting. Exceptions to this are documented and approved by the Chief Engineer.
					<b>Process Compliance</b>
T	F	N/A	6-50	I&RTS 9.1.1	The application includes an API test suite that exhaustively exercises all APIs provided by the application.
T	F	N/A	6-51	I&RTS 5.2.1	The application includes man pages, or HTML-format pages, for all APIs that are to be distributed with the Developer's Toolkit.
T	F	N/A	6-52	I&RTS 9.1.1	The application has been compiled without the debug option enabled.
T	F	N/A	6-53	I&RTS 9.1.1	If the application has published APIs implemented as shared libraries, static libraries are available as well.
T	F	N/A	6-54	I&RTS 9.1.1	If the application uses another application's public APIs and they are implemented as shared libraries, the application is linked with the shared libraries and not the static libraries.
			6-55	I&RTS 5.5.5	If the segment has a DEINSTALL and Community descriptor, it also includes a Comm.deinstall descriptor which reverses the actions of the Community descriptor during segment removal.
			6-56	I&RTS 5.5.11	The segment has been tested to ensure that it successfully installs over and replaces any previous version of the segment.



T	F	N/A	6-57	I&RTS 5.4.4	If the application contains a large static database, it is a separate data module.
T	F	N/A	6-58	I&RTS 9.1.1	(Unix) The application executables have been run through the Unix <code>strip</code> program.
					<b>Miscellaneous</b>
			6-59	I&RTS 5.4	Unless an account group segment, the segment is integrated within one or more of the predefined account groups.
			6-60	I&RTS 3.3	If the COE provides functions required by the segment, at least 50% of the functions required are provided by the COE and not by duplicative code in the segment.
			6-61	I&RTS 3.1.4	API backwards compatibility conforms to the version numbering scheme described in Chapter 3.
T	F	N/A	6-62	I&RTS 5.7.5	The application does not provide access to a command-line prompt.

## Interoperable Compliance (Level 7)

	Question	Reference	Security
T F N/A	7-1	I&RTS 5.7.8	The application does not place any temporary files in the system maintained temporary directory that are sensitive to alteration, deletion, or disclosure to unauthorized users.
T F N/A	7-2	I&RTS 5.7.8	If the application creates files that are sensitive to alteration or deletion by unauthorized users, they are not placed in any directory where such users have write access, and those files do not have write permissions set for such users.
T F N/A	7-3	I&RTS 5.7.8	If the application creates files which are sensitive to disclosure to unauthorized users, they are not placed in any directory where users have such access.
T F N/A	7-4	I&RTS 5.7.5	Entering a command-line mode requires the operator to enter a password and forces execution of the system login process.
T F N/A	7-5	I&RTS 5.7.1	The application does not contain features with multiple security levels.
T F N/A	7-6	I&RTS 5.2.1	Unclassified sample data is available with the application to allow for unclassified testing and training.
T F N/A	7-7	I&RTS 5.7.8, 5.7.9	The application does not create files or directories with write permissions for “world” users.
	7-8	I&RTS 5.7.8	Data files with different file permissions are split into separate directories underneath the segment’s data subdirectory.
			<b>Standards Compliance</b>
T F N/A	7-9	I&RTS 9.1.3	If written in C, the application is ANSI-C-compliant.
T F N/A	7-10	I&RTS 9.1.2	If written in Ada, the application is Ada-95-compliant.
T F N/A	7-11	I&RTS 9.1	If the application contains public APIs, Ada and C interfaces are both available.
	7-12	I&RTS 5.4.4	Global and local data owned by the segment are located underneath \$DATA_DIR as described in Chapter 5.
	7-13	I&RTS 5.2.2	Operator-specific data is located underneath /h/USERS as described in Chapter 5.
	7-14	I&RTS 5.3	Excepting COTS segments, all environment variables are named with the segment prefix unless approved by the Chief Engineer. (The Chief Engineer may authorize “grandfathering” of certain environment variables.)
T F N/A	7-15	I&RTS 2.5	The application uses only POSIX.1-defined interfaces to access the operating system, unless authorized by the Chief Engineer.

					<b>Network Services</b>
T	F	N/A	7-16	I&RTS 6.4	(NT) The application determines the location for shared data through the registry.
			7-17	I&RTS 6.2	(NT) The a stores information about shared resources in the location specified in Chapter 6.
					<b>GUI Environment</b>
T	F	N/A	7-18	I&RTS 9.1.1	The application uses resource files to control window behavior rather than hardcoded window behavior attributes.
T	F	N/A	7-19	I&RTS 6.6.7	The application supports cut and paste between GUI-based segments through the use of a shared clipboard.
T	F	N/A	7-20	I&RTS 6.6.4	(NT) The application uses TrueType fonts.
					<b>Database Services</b>
T	F	N/A	7-21	I&RTS 3.2.2.2	Data objects within the database application do not duplicate those already contained in available Universal database segments.
T	F	N/A	7-22	I&RTS 4.2.8, 5.8.2	Database fragmentation schemas are contained in separate modules.
T	F	N/A	7-23	I&RTS 4.3.5	Database roles/groups are specific to application privileges, not general purpose.
T	F	N/A	7-24	I&RTS 3.2.2.2	The database application does not duplicate any data available from the SHADE repository, except for performance reasons, unless approved by the DII COE Chief Engineer.
T	F	N/A	7-25	No I&RTS Reference	The database application uses only FIPS-127-2 SQL-defined interfaces to access the RDBMS query services.
T	F	N/A	7-26	I&RTS 4.3.3	Data object creation script files follow the specified structure and naming convention.
T	F	N/A	7-27	I&RTS 3.2.2.1	The data objects contained within a database are standardized according to DOD 8320 guidance.
T	F	N/A	7-28	I&RTS 4.3.4.4.1	All constraints and business rules are in the database, not the applications.
T	F	N/A	7-29	I&RTS 4.2.9	The database server application provides a reload capability and a non-destructive update capability.
					<b>DCE Services</b>
T	F	N/A	7-30	I&RTS 8.0, A-1.1	If the application uses DCE services, only the DCE interfaces defined by the DCE version supported by the COE (see Appendix A) are used to access those services.

			Runtime Environment		
T	F	N/A	7-31	I&RTS 5.3	The application does not include any environment variables that could be derived from an already defined environment variable.
			7-32	I&RTS 5.4.4	Segment references to global and local data are done through the \$DATA_DIR environment variable.
			7-33	I&RTS 6.2	(NT) The ap stores private INI files, if any, in the segment's data\INI subdirectory.
			Miscellaneous		
T	F	N/A	7-34	I&RTS 3.3	The application does not duplicate any functions provided by COE-component segments unless approved by the DII COE Chief Engineer.
T	F	N/A	7-35	I&RTS 3.3	No more than 25% of the applications accesses to COE-component segments will be through private APIs.
T	F	N/A	7-36	I&RTS 6.6.7	(NT) The application does not duplicate any Windows functions.

## Full DII Compliance (Level 8)

	Question	Reference	Security
T F N/A	8-1	I&RTS 5.7.5	Entry to and exit from the command-line mode causes an entry into the system audit logs that specifies the date, time, and user involved.
	8-2	I&RTS 5.3, 5.7.3, 5.7.5	Information written to the audit log includes the segment prefix.
T F N/A	8-3	I&RTS 5.7.8	The application does not mix restricted and unrestricted data files in the same directory.
			<b>Standards Compliance</b>
	8-4	I&RTS 5.1.2	The segment does not use any conventions obsoleted by this document (use of progs vs. bin, use of COMPONENT vs. CHILD, use of ModName and SegType vs. SegName etc.).
	8-5	I&RTS 5.3	All public symbols are named with the segment prefix naming convention.
T F N/A	8-6	I&RTS 5.2	All directory and file names begin with an alphanumeric character.
	8-7	I&RTS 5.4.4	The segment follows the convention that data owned by the segment under \$DATA_DIR is in the form \$DATA_DIR/local/ <i>segdir</i> /data and \$DATA_DIR/global/ <i>segdir</i> /data where <i>segdir</i> is the segment's home directory name.
			<b>GUI Environment</b>
T F N/A	8-8	DII Style Guide	The application is fully compliant with the <i>DII Style Guide</i> .
T F N/A	8-9	I&RTS 6.6.7	(NT) The application uses common control and dialog functions from COMCTL32.DLL and COMDLG32.DLL.
T F N/A	8-10	I&RTS 6.6.7	(NT) The application is close aware.
T F N/A	8-11	I&RTS 6.6.5	(NT) The application uses the Windows print dialog box for selecting printer configuration parameters.
			<b>Database Services</b>
T F N/A	8-12	I&RTS 4.3.4.2	Data elements are chosen from Joint standards and use the data type and units of measure prescribed in the standard.
T F N/A	8-13	I&RTS 3.2.2.2	A test database is available with test procedures to verify correct installation of the database and associated roles, and to verify correct operation of constraints defined in the database.

T	F	N/A	8-14	I&RTS 3.2.2.1, 3.2.2.2	The application does not duplicate any data already maintained in the SHADE repository <i>or</i> the COE-based target system, unless for performance reasons and only as approved by the DII COE Chief Engineer.
T	F	N/A	8-15	Baseline Architecture	The application uses only a DBMS supported by the COE.
					<b>Runtime Environment</b>
T	F	N/A	8-16	I&RTS 5.2.2	The application adds no more than one “home” environment variable to the global environment.
			8-17	I&RTs 5.3, 5.4.8	All executables and public symbols are named <i>segprefix_name</i> , where <i>segprefix</i> is the assigned segment prefix.
			8-18	I&RTS 6.2	(NT) Local environmental settings are established through an LOCALENV.BAT file in the segment's Scripts subdirectory.
					<b>Segment Descriptors</b>
			8-19	I&RTS 5.1.2	The segment uses SegInfo rather than individual segment descriptor files.
					<b>Process Compliance</b>
T	F	N/A	8-20	I&RTS 5.2.1	The application includes a set of test data for verifying correct application operation.
					<b>Miscellaneous</b>
T	F	N/A	8-21	I&RTS 1.2.1, 3.3	The application does not use any private APIs to access external applications. All accesses are through public APIs or approved protocol standards.
			8-22	I&RTS 5.2.2	Operator data is located through the <i>Preferences</i> APIs.
			8-23	I&RTS 5.2.2	The current operator profile is obtained through the <i>Preferences</i> APIs.
T	F	N/A	8-24	I&RTS 2.1.4, 2.1.6	The application does not duplicate functionality provided by any DII COE segment.